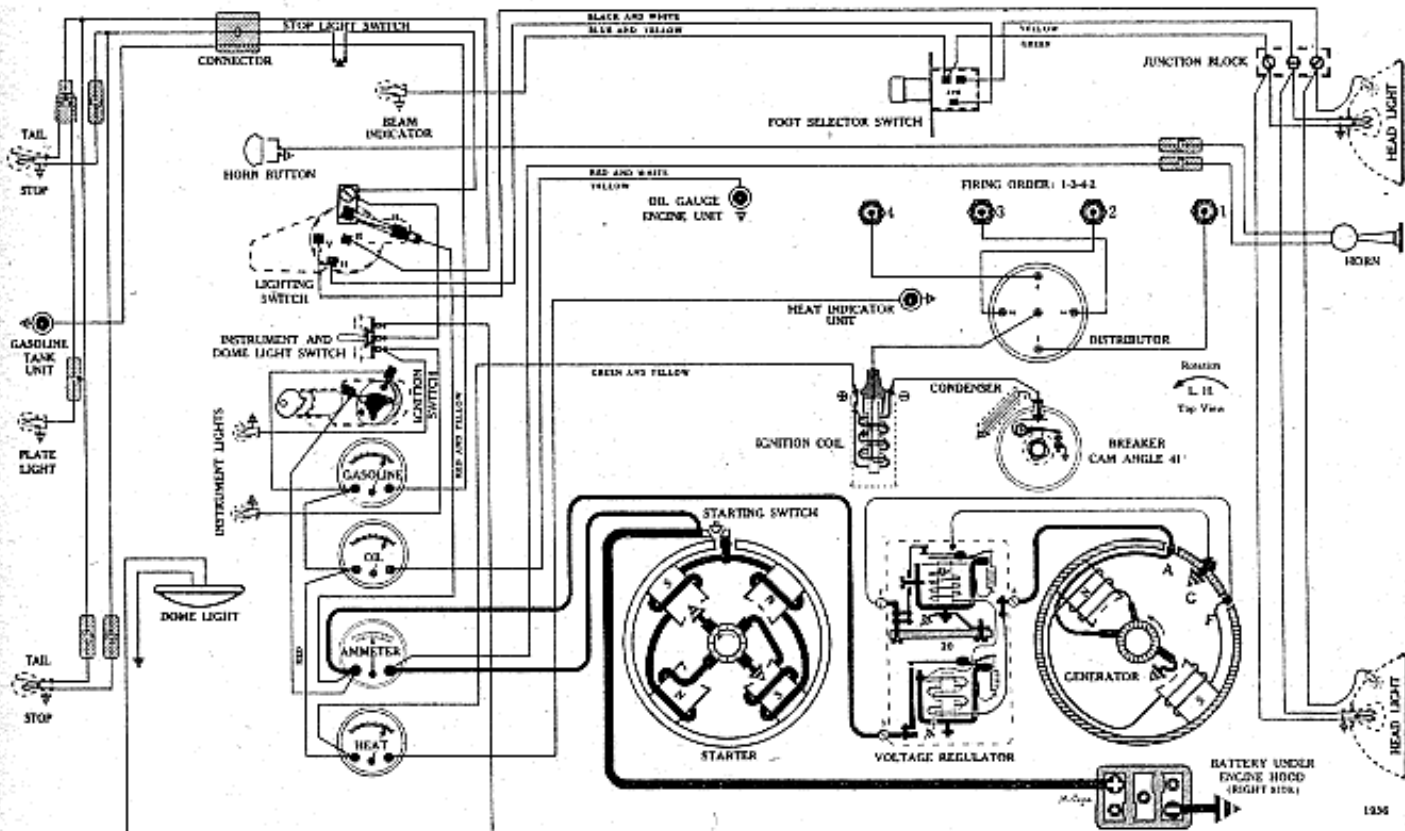


WILLYS

Engine { Bore 3-1/8
Stroke 4-3/8

Model 442, "Americar", 4 cyl., (1942)



BATTERY

Auto-Lite, AB-13, 6 Volts
Negative Terminal Grounded

Starting Capacity—96 amps. for 20 minutes.
minutes of Discharge at 300 Amps., Zero Degrees F.—2.0
Lighting Capacity—4 amps. for 20 hours (80 amp. hour).
Case—Length, 8-5/8; width, 7; height, 8-5/8 inches.

STARTER

A-L Test 162 Rotation, L. H., Com. End
Auto-Lite, MZ-4109

Connection to Engine—Bendix Drive, Type A-2233.
Running Free—70 amps. at 5-1/2 volts, 4300 R.P.M.
Stall Data—7.8 pound-feet, 420 amps. at 3 volts.
Brush Spring Tension—42 to 53 ounces on each (new
brushes). Brush spring tension should be measured by
a scale hooked under the brush spring at the bend just
beyond the brush, and the reading taken at moment
spring leaves the brush. The pull should be exerted
at right angles to force exerted by the brush spring.
Starting Switch—Auto-Lite, SW-3737-S, mounted on starter.
Switch should not close with less than 2.3 pounds pull,
applied at right angles to hole in end of lever.
Armature—Auto-Lite, MZ-2089.

IGNITION

A-L Test 618 Rotation, L. H., Top View
Auto-Lite, IGW-4129

(Full Automatic Spark Advance in conjunction with Vacuum
Chamber which moves the entire Distributor.)

Breaker—Contact separation .020 inch.

Cam Angle—41 degrees.

Percentage of Dwell—46%.

Contact Spring Tension—18 to 20 ounces.

Timing—Exact top dead center. Standard engines have
cast iron cylinder heads with compression ratio of
6.48 to 1; optional high altitude iron heads available
with ratio of 6.8 to 1. Aluminum heads have com-
pression ratio of 7.0 to 1. Flywheel mark "TC-IGN",
located at exact top dead center on flywheel, should
register with center of timing hole in engine rear
plate right side (below starting motor).

Spark Plugs—14-MM (Champion type J49); Gap .030 inch.

Firing Order—1-3-4-2.

Vacuum Distributor Control - Two used - (Auto-Lite,
VC-4007; Test No. 626)—7 degrees advance (Dist.).
Starts with vacuum of 3.60 inches of mercury. Requires
a vacuum of 15 inches for full travel.

Vacuum Chamber Advance Table—Auto-Lite, VC-4007.

Inches of Mercury	Degrees Dist. Advance
3.60	Start
5.22	1
6.85	2
8.48	3
10.11	4
11.74	5
13.37	6
15.00	7

Vacuum Distributor Control (Auto-Lite, VC-4010; Test No.
467)—10 degrees advance (Dist.). Starts with vacuum
of 3.50 inches of mercury. Requires a vacuum of 15
inches for full travel.

WILLYS

Model 442, "Americar", 4 cyl., (1942)

Inches of Mercury	Degrees Dist. Advance
3.50	Start
4.65	1
5.80	2
6.95	3
8.10	4
9.25	5
10.40	6
11.55	7
12.70	8
13.85	9
15.00	10

Automatic Advance—9½ degrees (Distributor).

Eng. R.P.M.	Dist. R.P.M.	Degrees Advance (Dist.)
600	300	Start
852	426	1
1104	552	2
1356	678	3
1608	804	4
1862	931	5
2114	1057	6
2366	1183	7
2618	1309	8
2870	1435	9
3000 (Max.)	1500	9½

Condenser—Auto-Lite, IGB-1025. Capacity .20 to .25 microfarads.

Contact Point—Auto-Lite, IGP-33.

Breaker Lever and Point—Auto-Lite, IGW-3028.

Motor—Auto-Lite, IGB-1239.

Distributor Cap—Auto-Lite, IGB-1241.

Ignition Coil—Auto-Lite, IG-4090-A.

Ignition Switch—H. A. Douglas Mfg. Co., No. 2980.

GENERATOR

Rotation, L. H., Com. End
Auto-Lite, GCJ-4811-A

Performance Data—Gen. cold.

Amps.	R.P.H.	Volts
0	825	6.20
2	870	6.38
4	915	6.55
6	960	6.70
8	1020	6.89
10	1075	7.05
12	1135	7.22
14	1200	7.38
16	1270	7.53
18	1340	7.70
20	1545	7.89
22	1545	8.05
24	1720	8.20
25	1850	8.30

Motoring Freely—4.0 to 4.4 amps. at 6 volts.

Max. Stall Current—28 to 30 amps. at 5.2 volts.

Field Test—1.9 to 2.1 amps. at 6 volts.

Brush Spring Tension—53 ounces max. on each (new brushes).

Brush spring tension should be measured by a scale hooked in hole at end of brush arm, and the pull exerted at right angles to force exerted by brush spring.

Main Brush Setting—The main brushes should be set 1 to 1-1/2 commutator bars ahead of neutral.

Third Brush Adjustment—Loosen cover band. Shift third brush by hand. Mounting plate held in any position by friction clamp washers. The third brush should be set 2 bars less 2 micas (min.) to 2 bars less 1 mica (max.) from the insulated main brush.

Armature—Auto-Lite, GCJ-2006-F.

RELAY REGULATOR

Auto-Lite, VRR-4004-A Neg. Ground

A combination of Cut-Out Relay and Vibrating Point Voltage Regulator.

CUT-OUT RELAY

Resistance of Voltage Winding—29.8 to 33.0 ohms.

Points Close—6.4 to 6.6 volts.

Points Open—4.2 to 4.8 volts (points open with a discharge of approximately 4 to 6 amperes).

Contact Point Gap—.015 inch minimum.

Armature Air Gap—.031 to .034 inch.

Armature Spring—12-3/4 turns.

VOLTAGE REGULATOR

Resistance of Voltage Winding—10.8 to 12.0 ohms.

Resistance Unit—Auto-Lite, TC-51-T, marked "20"; Ohms 19 to 21.

Armature Air Gap—.048 to .052 inch (the distance between core and underside of armature when contacts just open).

Contact Point Gap—.012 inch minimum (armature pressed down against stop pin).

Operating Voltage—7.3 to 7.6 (70° F.).

Armature Spring—14-1/2 turns.

LIGHTING

Switch—H. A. Douglas Mfg. Co., No. 5400.

Location—Behind instrument board.

Fuses—Single 20 amp. fuse (type SFE-20) on switch back protects all lighting circuits.

Instrument Light Switch—H. A. Douglas Mfg. Co., No. 5922.

Foot Selector Switch—H. A. Douglas Mfg. Co., No. 5530.

Lamps—HEAD--2320; PARKING--55; BEAM INDICATOR--51; INSTRUMENT--51; DOME--63; LICENSE PLATE--63; STOP AND TAIL--1158.